

# A Conceptual Architecture for Deep-learning-based Video-Objects Retrieving System

Dinh-Lam Pham<sup>1,2</sup>, Viet-Vu Vu<sup>2</sup>, Byeongnam Yoon<sup>1</sup>, Kyoung-Sook Kim<sup>1</sup>, Kwanghoon Pio Kim<sup>1</sup>

<sup>1</sup>Contents Convergence Software Research Institute, Kyonggi University, South Korea

<sup>2</sup>Information Technology Institute, Vietnam National University Hanoi, Vietnam

{phamdinhlam, vuvietvu}@vnu.edu.vn, {phamdinhlam,tomayoon, khmjmc, kwang}@kgu.ac.kr

*(Pt9)Abstract*— Finding content in videos or video-objects retrieving systems has been a matter of concern for many years until now. Regularly, to retrieve and explore content in videos, the traditional solution is that we oblige to use the human eyes and examine those videos manually until we obtain the content that appears in the video. To speed up the search, we can fast-forward the video or predict when the content appeared. Nevertheless, this method often consumes a lot of time, especially when we need to retrieve content in a large number of Videos. In this paper, we introduce a deep-learning-based architecture that allows retrieving objects in videos instantly to search objects in CCTV cameras. This solution promises to bring high efficiency in finding video content, thereby saving costs and human resources to operate related systems.

*(Pt9)Keyword*— The video-objects retrieving system, video content retrieval, CCTV Camera, deep learning-based, object detections



**Dinh-Lam Pham** is a research professor in the Contents Convergence Software Research Institute at Kyonggi University, South Korea. He received B.S. degree and M.S. degree in computer science from Thainguyn University in 2008 and 2010, respectively, and received Ph.D. degree in Computer Science from Kyonggi University in 2021. His research interests include video retrieving system, deep learning, workflow systems, BPM, workflow-supported social and affiliation networks discovery and analysis, process mining, deep-learning-based process predicting.



Assoc. Prof. Dr. **Viet-Vu Vu** received the B.S. degree in Computer Science from Ha Noi University of Education in 2000, a M.S. degree in Computer Science from Ha Noi University of Technology in 2004, and a Doctor Degree in Computer Science from Paris 6 University in 2011. He is a researcher at Information Technology Institute, Vietnam National University, Hanoi. His research interests include clustering, active learning, semi-supervised clustering, and E-government applications.

**Byeongnam Yoon** (M'97)



He became a Member of IEEE in 1997. He was born in Seoul Korea 1949. He got the PhD in computer science, Chungnam National University, Dejon city, Korea, 1997. He worked for the Sperryrand UNIVAC as a Computer Specialist 1974 -1978, Samsung as a Manager of Telecommunications Section 1978 -1982, Electronics & Telecommunications Research Institute (ETRI) as a Principal Researcher 1982 – 1999, National Information society Agency (NIA) as a Senior Executive Director General 1999 – 2010, Kyonggi University as an Associate Professor Faculty of Computer Science 2010 - 2016. Vietnam National University, Hanoi as a Invited professor 2017 – 2020. His research area include a Telecommunications, Internet, Software, Web programming & security, e-Government, Enterprise Architecture, Work Flow, System Work Method. SPiCE, CMMI, BPM, etc

**Kyoung-Sook Kim** is an adjunct professor of the department of computer science and engineering at Kyonggi University, South Korea. She received her B.S. degree in computer science from Kyonggi University in 1984. She also received her M.S. and Ph.D. degrees in computer engineering from Kyunghee University in 2001 and 2019, respectively. She had worked as a researcher and developer at FAST Systems Inc. and OSI Corp. in South Korea. Her research interests include large-scale database systems and applications, enterprise information systems, real-time databases, distributed databases, temporal databases, federate databases, object-oriented database management systems, and the Internet of Things collaboration architectures and services.



**Kwanghoon Pio Kim** is a full professor of computer science department and the founder and supervisor of the collaboration technology research laboratory at Kyonggi University, South Korea. He received B.S. degree in computer science from Kyonggi University in 1984. And he received M.S. degree in computer science from Chungang University in 1986. He also received his M.S. and Ph.D. degrees from the computer science department at University of Colorado Boulder, in 1994 and 1998, respectively. At Kyonggi University, he is Dean of the Computerization and Informatics Institute, and the director of the contents convergence software research center, as well. He had worked as researcher and developer at Aztek Engineering, American Educational Products Inc., and IBM in USA, as well as at Electronics and Telecommunications Research Institute (ETRI) in South Korea. In present, he is a vice-chair of the BPM Korea Forum. He has been in charge of a country-chair (Korea) and ERC vice-chair of the Workflow Management Coalition. He has also been on the editorial board of the journal of KSII, and the committee member of the several conferences and workshops. His research interests include groupware, workflow systems, BPM, CSCW, collaboration theory, Grid/P2P distributed systems, process warehousing and mining, workflow-supported social networks discovery and analysis, process-aware information systems, data intensive workflows, and process-aware Internet of Things.

